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secure membership a candidate is first proposed by three members of the Society, who vouch for his eligibility under the constitution, which requires that he be actively engaged in research and the author of at least three contributions to knowledge in botanical lines. After notice of his candidacy has been sent to all members of the Society, written objections to him may be filed with the Secretary by any member. The Council then considers the candidates proposed and recommends such as it thinks proper. These names are then presented to the Society. One-fifth of the votes cast, if negative, will defeat any candidate.

The address of the retiring President, Dr. Charles E. Bessey, of the University of Nebraska, was delivered on Tuesday evening. A full abstract of the address is printed elsewhere in this number.

The following papers were read at the opening sessions on Wednesday :

B. L. ROBINSON : A case of eblastesis and axial proliferation in *Lipidium apetalum*.

J. C. ARTHUR : Movement of protoplasm in coenocytic hyphæ.

JOHN M. COULTER : Pollen grains and antipodal cells.

FREDERIC E. CLEMENTS (presented by C. E. BESSEY) : The transition region of the Caryophyllales.

D. P. PENHALLOW : A revision of the species *Picea* occurring in northeastern America.

EDWARD L. GREENE : Bibliographic Difficulties.

WILLIAM FAWCETT : The botanical gardens of Jamaica. Read by title.

Mr. Fawcett, finding himself unable to be present, sent his paper by post, but it unfortunately was not received in time to be presented. The Council had invited Drs. D. T. MacDougal and D. H. Campbell to present, in connection with this paper, their report upon the island of Jamaica as a site for the proposed tropical laboratory. It

was intended that Dr. Fawcett's account of the botanic gardens should present, by means of lantern illustrations, an idea of the facilities already provided there. Although obliged to forego this, Dr. MacDougal spoke of the physical features and climate of the island, and Dr. Campbell discussed its botanical resources. The great interest with which the report was listened to indicates the desire which every botanist feels to have this proposed laboratory in early operation.

The Council also invited Mr. Herbert J. Webber to present before the Society an account of his remarkable discoveries in connection with the fertilization of *Zamia*. Mr. Webber spoke of the development of the pollen tube and of its spermatozoids and of the way in which they effect the fertilization of the egg. After the meeting Mr. Webber displayed the preparations in which he had made his discoveries. These were examined with the greatest interest.

It will be seen by an inspection of the foregoing list that the papers presented touched all of the great fields of botanical science, with the exception of phyto-geography. Sessions of two hours in the morning and three and a-half in the afternoon were barely sufficient for the completion of the program. At the next meeting, which is to be held in Boston in connection with that of the A. A. A. S., the reading of papers will probably have to be begun a day earlier.

C. R. BARNES,
Secretary.

THE INTERNATIONAL MATHEMATICAL CONGRESS.

THE meeting at Zurich, August 9th-11th, of the International Congress of Mathematicians was in every way a success. More than two hundred members took part. America sent seven representatives, including, however, three Cambridge graduates, now transplanted to Pennsylvania, Profes-

sors Harkness, Morley and Charlotte Scott. The greatest mathematician in the world, Sophus Lie, was not expected; and the greatest French mathematician, Poincaré, though down for a speech, did not come; but the actual program was particularly rich and interesting.

It is very noteworthy that the Congress was divided into five sections: (1) Arithmetic and Algebra; (2) Analysis, and Theory of Functions; (3) Geometry; (4) Mechanics and Mathematical Physics; (5) History and Bibliography.

The program of the first section contained the only title in English: 'On Pasigraphy, its present state and the pasigraphic movement in Italy,' by Ernst Schroeder, of Karlsruhe, author of 'Algebra der Logik.'

The second section contained a title from Z. de Galdeano, whose heroic efforts gave Spain a Journal of Mathematics, now unfortunately dead in the decadence of that beautiful, priest-ridden land.

The program of the third section, the only one consecrated wholly to a single title, Geometry, contained two titles on the non-Euclidean geometry.

Burali: Les postulats pour la géométrie d'Euclide et de Lobatschewsky.

Andrade: 'La statique non euclidienne et diverses formes mécaniques du postulatum d'Euclide.'

In Section IV. Stodola treated an important subject, 'Die Beziehungen der Technik zur Mathematik.'

In the fifth section Eneström gave an important discussion of bibliography, a point where the Congress can and will render aid of fundamental importance.

In the first general assembly Rudio spoke on the aim and organization of international mathematical congresses.

It was determined that the next Congress should take place at Paris in 1900, under the auspices of the Société mathématique de France.

As aims were specified: (1) to promote personal relations between mathematicians of different lands; (2) to give, in reports or conferences, an aperçu of the actual state of the divers branches of mathematics, and to treat questions of recognized importance; (3) to deliberate on the problems and organization of future congresses; (4) to treat questions of bibliography, of terminology, etc., on subjects where an *entente internationale* appears necessary.

Rudio mentioned the yearly issue of an address-book of all mathematicians of the world with indication of their specialties; also of a biographic dictionary of living mathematicians with portraits; also of a literary journal for mathematics.

At the second general assembly Peano gave a conference: 'Logica matematica,' and Felix Klein a conference on teaching higher mathematics.

Three important resolutions were introduced by Vasiliev, of Kazan; Laisant, of Paris, and G. Cantor, of Halle, constituting: (1) a commission for preparation of general reports; (2) a standing bibliographic and terminology commission; (3) a commission to give the congress a permanent character by archives, libraries, stations for correspondence, editing or publishing noteworthy works, etc.

Surely this Congress has proven that it came only in the fullness of time, and that the world moves!

GEORGE BRUCE HALSTED.

AUSTIN, TEXAS.

CURRENT NOTES ON ANTHROPOLOGY.

NEW MUSEUM PUBLICATION.

In May appeared 'Bulletin Number 1,' of the Free Museum of Science and Art, Philadelphia, a neat octavo of fifty pages, with illustrations. The announcement states that it will be published four times a year, at the subscription price of one dollar